

**SOLID WASTE PERMITTING
SUBMISSION INSTRUCTION NO. 4**

**DESIGN PLANS AND REPORT FOR OTHER SOLID WASTE MANAGEMENT FACILITIES
(COMPOST FACILITIES, SOLID WASTE TRANSFER STATIONS, CENTRALIZED WASTE
TREATMENT FACILITIES, MATERIALS RECOVERY FACILITIES, AND WASTE PILES)**

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I. DESIGN PLANS

Submit the following design plans on 11" x 17" paper in the order provided as Part B Attachment III. A full-size set of Design Plans should also be provided in rolls and/or in pockets for review. The Design Plans shall be prepared and certified by a professional engineer registered to practice in the Commonwealth. The Design Plans should be submitted with the Part B Application or Part B Modification Application as Attachment III to DEQ Form SW PTB. [9 VAC 20-81-480.A.]

The following site features shall be included on each of the plan sheets as applicable:

- Existing site conditions, unless the information leads to confusion with the data intended for display;
- A survey grid with base lines and bench marks to be used for field control;
- All drainage patterns and surface water drainage control structures;
- Access roads and traffic flow patterns;
- All temporary and permanent fencing;
- Methods of screening such as berms, vegetation, or special fencing;
- Wastewater or leachate collection, control, storage, and treatment systems;
- Special waste handling areas;
- Construction notes and references to details; and
- Other site features.

A. Title Sheet

Provide a Title Sheet stating the project title, preparer of the plans, the person/organization for whom the plans were prepared, a table of contents, and a location map showing the location of the site and area to be served.

B. Existing Site Conditions Plan Sheet

Show conditions existing at the site prior to facility development. [9VAC20-81-480.A.1.]

C. Engineering Modification Plan Sheet

{Applicable only to sites with engineering modifications} Show engineering modifications indicating the appearance of the site after installation of all engineering modifications. [9 VAC 20-81-480.A.2.]

D. Phasing Plan Sheets

Provide a series of plan sheets showing the progression of site development through time; a separate plan shall be provided for initial site preparations and for each major phase or new area where substantial site preparation must be performed. Each plan shall include a list of construction items and quantities necessary to prepare the phase/cell indicated. [9 VAC 20-81-480.A.3.]

E. Design Drawing Plan Sheet(s)

Show design information relating to the specific solid waste management process to include:

1. Profile and plan views of all structures and enclosures showing dimensions. The plan views shall show building setbacks, side and rear distances between the proposed structure and other existing or proposed structures, roadways, parking areas, and site boundaries.
2. Interior floor plans, showing the layout, profile view, and dimensions of the processing lines, interior unloading, sorting, storage, and loading areas as well as other functional process areas. The plan should identify the storage area locations during normal operations and when facility downtime exceeds 24 hours.
3. A utility plan identifying the location and describing the stormwater drainage system, sanitary sewer system, water supply system, energy system, and interface of the proposed facility with the existing utility systems.

[9 VAC 20-81-480.A.4.]

F. Detail Drawing Plan Sheet(s)

Show detail drawings and typical sections for drainage control structures, access roads, fencing, buildings, signs, and other construction details. [9 VAC 20-81-480.A.6.]

II. DESIGN REPORT FOR COMPOST FACILITIES

The Design Report should include supplemental discussions and design calculations to facilitate department review of the proposed facility design. The Design Report should be submitted with the Part B Application or Part B Modification Application as Attachment VI to DEQ Form SW PTB. The Design Report should address the information provided below, which applies to applicants proposing to construct and operate a Type A or Type B compost facility for the processing of Category I, II, III, and IV feedstocks. Applicants proposing to construct and operate an alternate type facility shall apply for an Experimental Permit in accordance with [9 VAC 20-81-410.C](#). Applicants proposing to compost sewage sludge should obtain a Biosolids Permit from the [Virginia Pollutant Abatement Permit Program](#). [9 VAC 20-81-330.A. and 480.B.2.]

Format The Design Report should start with a title page and table of contents followed by each of the following sections, providing the information requested. The title page should identify the facility name and permit number, the permit applicant, document date, and document preparer information. In addition, the header or footer of each page should include the facility name, permit number, document title, revision date, and page number.

A. Introduction

Provide an introduction that identifies the project title; engineering consultants; site owner, licensee, and operator; facility type and expected site life. Identify any exemptions or variances desired by the applicant. [9 VAC 20-81-480.B.2.a.]

B. Site Access

1. Security

Provide a discussion on the perimeter fencing types and gate controls to be employed to prevent unauthorized access. [9 VAC 20-81-480.A.5.e. and A.6.]

2. Roads

Indicate access roads to the gate and from the gate to the management areas. Show traffic flow patterns to and within the storage, transfer, and treatment areas. Specify the on-site access road material. [9 VAC 20-81-320.A., 330.A.1.e., 330.A.2.g. and 480.A.5.d.]

3. Queuing

Describe the mechanisms or features which will be employed to provide for an even flow of traffic into, out of, and within the site. The description shall show that the waiting delivery vehicles will not back up onto the public road. [9 VAC 20-81-320.D.]

4. Aesthetics

Discuss the natural or artificial screening of the operation areas. Ensure the buffer area required under [9 VAC 20-81-320.F.1](#) is clearly shown on the Design Plans. [9 VAC 20-81-480.A.5.f.]

C. Facility Design

Provide information on the following topics, referencing the Design Plans as appropriate.

1. *Site Activities*

Indicate the type of composting facility to be operated and specify the quantities and feedstock categories to be accepted. Indicate the process rate and storage capacity of the facility and identify the municipalities, industries, and collection and transportation agencies served. Provide a general description of the activities to be conducted on site with regards to the unloading, handling, composting, and storage of incoming solid wastes. Reference the appropriate Design Drawing Plan Sheet(s). [9 VAC 20-81-330.A.1.a., A.2.a., and A.2.e. and 480.B.2.a.]

2. *Surface of Handling Areas*

Provide a description of the receiving, mixing, curing and compost storage areas, demonstrating that the flow of liquids through the bases will be prevented. Describe the type of base, its material, the base thickness and coating, if applicable. [9 VAC 20-81-330.A.1.b., A.2.c., and A.2.d.]

3. *Covered Areas and Containment*

Discuss the storage containers to be used for segregated noncompostable, nonbiodegradable, and undesirable wastes. For facilities composting Category II, III, and IV feedstocks, discuss the location and design covered areas for receiving, segregating, and grading of waste. [9 VAC 20-81-330.A.1.a. and A.2.a.]

4. *Engineering Controls*

Discuss the engineering controls incorporated into the design to address any of the following, if applicable:

- Springs, seeps, and other groundwater intrusions;
- Gas, water, or sewage lines under the active areas; or
- Electric transmission lines above or below the active areas.

[9 VAC 20-81-330.A.1.c. and A.2.f.]

5. *Equipment*

Indicate the equipment to be used to segregate and process wastes. Indicate arrangements for standby equipment to ensure continuity of composting operations. [9 VAC 20-81-330.A.1.a., A.2.e., and A.2.h.]

6. *Utilities*

Discuss the public or private utilities that will serve the site as indicated on the Utility Plan provided with the Design Plans and discuss the availability of auxiliary power to ensure continuity of composting operations. [9 VAC 20-81-330.A.2.h.]

D. Liquids Management

1. *Stormwater*

Provide a description of all drainage patterns and surface drainage control structures within the unloading, handling, composting, and storage areas and at the site perimeter to include berms, ditches, sedimentation basins, pumps, sumps, culverts, pipes, inlets, velocity breaks, sodding, erosion matting, or other methods of erosion control. Reference the Design Plans as appropriate. If applicable, discuss the permits issued for stormwater management and discharge. [9 VAC 20-81-330.A.1.d., 330.A.2.b., and 480.A.5.c.]

2. *Wastewater Disposal*

Discuss the wastewater collection, control and treatment (if applicable) systems to include pipes, manholes, trenches, berms, collection sumps or basins, pumps, and risers. Reference the Design Plans as appropriate. Indicate the final disposal location of all wastewaters. [9 VAC 20-81-330.A.1.d., 330.A.2.b., and 480.A.5.g.]

E. Appendices

Provide the following appendices, if applicable. [9 VAC 20-81-330.A.2.i. and 480.B.2.b.]

1. *Calculations*

Provide Calculations substantiating the proposed process rate and storage capacity provided on DEQ Form PTB and discussed in this Design Report.

- a. Process Rate
- b. Storage Capacity
- c. Table relating process rate to equipment and personnel needs
- d. Sizing of Surface Water Control Features – The sizing shall be based on a rainfall intensity of one hour duration and a 10-year return period.

2. *Material Specifications*

3. *Operating Agreements*

4. *Leachate Treatment Agreement(s)*

5. *Documentation of Long-Term Funding*

6. *Copies of DEQ issued Permits (Air, VPDES, etc.)*

III. DESIGN REPORT FOR TRANSFER STATIONS

The Design Report should include supplemental discussions and design calculations to facilitate department review of the proposed facility design. The Design Report should be submitted with the Part B Application or Part B Modification Application as Attachment VI to DEQ Form SW PTB. The Design Report should address the information provided below, which applies to applicants proposing to construct and operate a solid waste transfer station. [9 VAC 20-81-330.B. and 480.B.2.]

Format The Design Report should start with a title page and table of contents followed by each of the following sections, providing the information requested. The title page should identify the facility name and permit number, the permit applicant, document date, and document preparer information. In addition, the header or footer of each page should include the facility name, permit number, document title, revision date, and page number.

A. Introduction

Provide an introduction that identifies the project title; engineering consultants; site owner, licensee, and operator; facility type and expected site life. Identify any exemptions or variances desired by the applicant.

Specify the quantities and wastes to be accepted, as indicated on DEQ Form PTB, and reference any information provided in PTB Attachment VIII on special waste acceptance and handling procedures. Indicate the process rate and storage capacity of the facility and identify the municipalities, industries, and collection and transportation agencies served. [9 VAC 20-81-480.B.1.a.]

B. Site Access

1. Security

Provide a discussion on the perimeter fencing types and gate controls to be employed to prevent unauthorized access. [9 VAC 20-81-480.A.5.e. and A.6.]

2. Roads

Indicate access roads to the gate and from the gate to the management areas. Show traffic flow patterns to and within the storage, transfer, and treatment areas. Specify the on-site access road material. [9 VAC 20-81-320.A., 330.B.1. and 480.A.5.d.]

3. Queuing

Describe the mechanisms or features which will be employed to provide for an even flow of traffic into, out of, and within the site. The description shall show that the waiting delivery vehicles will not back up onto the public road. [9 VAC 20-81-320.D. and 330.B.5.]

C. Facility Design

Provide information on the following topics, referencing the Design Plans as appropriate.

1. *Site Activities*

Provide a general description of the activities to be conducted on site with regards to the unloading, handling, composting, and storage of incoming solid wastes. Reference the appropriate Design Drawing Plan Sheet(s). [9 VAC 20-81-330.B. and 480.B.1.b.]

2. *Surface of Handling Areas*

Provide a description of the surfaces of unloading, receiving, tipping, and storage area floors, buildings, and ramps, demonstrating that they will withstand heavy vehicle usage, prevent the flow of liquids through the floor, and that they can be easily cleaned. [9 VAC 20-81-330.B.2. and B.4.]

3. *Safety*

Discuss the use of truck wheel curbs and other safety features to prevent backing or falling into a pit, if applicable. [9 VAC 20-81-330.B.3.]

4. *Utilities*

Discuss the public or private utilities that will serve the site as indicated on the Utility Plan provided with the Design Plans and discuss the water supply available for transfer area cleaning. [9 VAC 20-81-480.A.4.(3)]

5. *Design Features*

{This section is only applicable to those facilities proposing to store waste materials on site.} Describe how the facility design will prevent the migration of vectors, odors, dust, wash water and litter off site. Describe the fire alarm and protections systems in place to detect, control, and extinguish fires. [9 VAC 20-80-330.B.7.]

6. *Household Hazardous Waste*

If portions of the transfer station are used for the storage of household hazardous waste, describe the containment system to be used as required by 40 CFR 267.173, as amended. [9 VAC 20-81-330.B.6.]

D. Liquids Management

1. *Stormwater*

Provide a description of all drainage patterns and surface drainage control structures within the unloading, receiving, tipping, and storage areas and at the site perimeter to include berms, ditches, sedimentation basins, pumps, sumps, culverts, pipes, inlets, velocity breaks, sodding, erosion matting, or other methods of erosion control. Reference the Design Plans as appropriate. If applicable, discuss the permits issued for stormwater management and discharge. [9 VAC 20-81-480.A.5.c.]

2. *Wastewater Collection and Disposal*

Discuss the wastewater collection, control and treatment (if applicable) systems to include pipes, manholes, trenches, berms, collection sumps or basins, pumps, and risers. Reference the Design Plans as appropriate. Indicate the final disposal location of all wastewaters. [9 VAC 20-81-330.B.2. and 480.A.5.g.]

E. Appendices

Provide the following appendices, if applicable. [9 VAC 20-81-480.B.1.e.]

1. *Calculations*

Provide Calculations substantiating the proposed process rate and storage capacity provided on DEQ Form PTB and discussed in this Design Report.

- a. Process Rate
- b. Storage Capacity
- c. Table relating process rate to equipment and personnel needs

2. *Material Specifications*

3. *Operating Agreements*

4. *Leachate Treatment Agreement(s)*

5. *Documentation of Long-Term Funding*

6. *Copies of DEQ issued Permits (Air, VPDES, etc.)*

IV. DESIGN REPORT FOR CENTRALIZED WASTE TREATMENT FACILITIES

The Design Report should include supplemental discussions and design calculations to facilitate department review of the proposed facility design. The Design Report should be submitted with the Part B Application or Part B Modification Application as Attachment VI to DEQ Form SW PTB. The Design Report should address the information provided below, which applies to applicants proposing to construct and operate a centralized waste treatment facility. [9 VAC 20-81-330.C. and 480.B.2.]

Format The Design Report should start with a title page and table of contents followed by each of the following sections, providing the information requested. The title page should identify the facility name and permit number, the permit applicant, document date, and document preparer information. In addition, the header or footer of each page should include the facility name, permit number, document title, revision date, and page number.

A. Introduction

Provide an introduction that identifies the project title; engineering consultants; site owner, licensee, and operator; facility type and expected site life. Identify any exemptions or variances desired by the applicant.

Specify the quantities and wastes to be accepted, as indicated on DEQ Form PTB, and reference any information provided in PTB Attachment VIII on special waste acceptance and handling procedures. Indicate the process rate and storage capacity of the facility and identify the municipalities, industries, and collection and transportation agencies served. [9 VAC 20-81-480.B.1.a.]

B. Site Access

1. Security

Provide a discussion on the perimeter fencing or natural barriers and gate controls to be employed to prevent unauthorized access. [9 VAC 20-81-330.C.11., 480.A.5.e. and 480.A.6.]

2. Roads

Indicate access roads to the gate and from the gate to the management areas. Show traffic flow patterns to and within the storage, transfer, and treatment areas. Specify the on-site access road material. [9 VAC 20-81-320.A., 330.C.2. and 480.A.5.d.]

3. Queuing

Describe the mechanisms or features which will be employed to provide for an even flow of traffic into, out of, and within the site. The description shall show that the waiting delivery vehicles will not back up onto the public road. [9 VAC 20-81-320.D. and 330.C.10.]

C. Facility Design

Provide information on the following topics, referencing the Design Plans as appropriate.

1. *Site Activities*

Provide a general description of the activities to be conducted on site with regards to the unloading, treatment, and storage of incoming solid wastes. Reference the appropriate Design Drawing Plan Sheet(s). [9 VAC 20-81-330.C. and 480.B.1.b.]

2. *Tanks*

Discuss the number and types of tanks and internal storage areas used to treat and store both incoming and processed solid waste. Discuss the proposed containment structures; these structures shall be capable of containing any leakage and can be easily cleaned. [9 VAC 20-81-330.C.3 through C.8.]

3. *Utilities*

Discuss the public or private utilities that will serve the site as indicated on the Utility Plan provided with the Design Plans and discuss the water supply available for transfer area cleaning. [9 VAC 20-81-480.A.4.(3)]

4. *Design Features*

Describe the fire alarm and protections systems in place to detect, control, and extinguish fires. Describe how the facility design will prevent the migration of vectors, odors, dust, wash water and litter off site. Reference the applicable requirements of the regulations promulgated by the Air Pollution Control Board regarding air releases of dust and odor. [9 VAC 20-80-330.C.1. and C.9.]

D. Liquids Management

1. *Stormwater*

Provide a description of all drainage patterns and surface drainage control structures within the unloading, receiving, tipping, and storage areas and at the site perimeter to include berms, ditches, sedimentation basins, pumps, sumps, culverts, pipes, inlets, velocity breaks, sodding, erosion matting, or other methods of erosion control. Reference the Design Plans as appropriate. If applicable, discuss the permits issued for stormwater management and discharge. [9 VAC 20-81-480.A.5.c.]

2. *Wastewater Collection and Disposal*

Discuss the wastewater collection, control and treatment (if applicable) systems to include pipes, manholes, trenches, berms, collection sumps or basins, pumps, and risers. Reference the Design Plans as appropriate. Indicate the final disposal location of all wastewaters. [9 VAC 20-81-480.A.5.g.]

E. Appendices

Provide the following appendices, if applicable. [9 VAC 20-81-480.B.1.e.]

1. *Calculations.*

Provide Calculations substantiating the proposed process rate and storage capacity provided on DEQ Form PTB and discussed in this Design Report.

- a. Process Rate

- b. Storage Capacity
 - c. Table relating process rate to equipment and personnel needs
2. *Material Specifications*
 3. *Operating Agreements*
 4. *Leachate Treatment Agreement(s)*
 5. *Documentation of Long-Term Funding*
 6. *Copies of DEQ issued Permits (Air, VPDES, etc.)*

V. DESIGN REPORT FOR MATERIALS RECOVERY FACILITIES

The Design Report should include supplemental discussions and design calculations to facilitate department review of the proposed facility design. The Design Report should be submitted with the Part B Application or Part B Modification Application as Attachment VI to DEQ Form SW PTB. The Design Report should address the information provided below, which applies to applicants proposing to construct and operate a materials recovery facility. [9 VAC 20-81-330.D. and 480.B.2.]

Format The Design Report should start with a title page and table of contents followed by each of the following sections, providing the information requested. The title page should identify the facility name and permit number, the permit applicant, document date, and document preparer information. In addition, the header or footer of each page should include the facility name, permit number, document title, revision date, and page number.

A. Introduction

Provide an introduction that identifies the project title; engineering consultants; site owner, licensee, and operator; facility type and expected site life. Identify any exemptions or variances desired by the applicant.

Specify the quantities and wastes to be accepted, as indicated on DEQ Form PTB, and reference any information provided in PTB Attachment VIII on special waste acceptance and handling procedures. Identify the municipalities, industries, and collection and transportation agencies served. [9 VAC 20-81-480.B.1.a.]

B. Site Access

1. Security

Provide a discussion on the perimeter fencing types and gate controls to be employed to prevent unauthorized access. [9 VAC 20-81-330.D.10, 480.A.5.e. and A.6.]

2. Roads

Indicate access roads to the gate and from the gate to the management areas. Show traffic flow patterns to and within the storage, transfer, and treatment areas. Specify the on-site access road material. [9 VAC 20-81-320.A., 330.D.2., and 480.A.5.d.]

3. Queuing

Describe the mechanisms or features which will be employed to provide for an even flow of traffic into, out of, and within the site. The description shall show that the waiting delivery vehicles will not back up onto the public road. [9 VAC 20-81-320.D. and 330.D.8.]

C. Facility Design

Provide information on the following topics, referencing the Design Plans as appropriate.

1. *Surface of Handling Areas*

Provide a description of the surfaces of unloading, receiving, tipping, and storage area floors, buildings, and ramps, demonstrating that they will withstand heavy vehicle usage, prevent the flow of liquids through the floor, and that they can be easily cleaned. [9 VAC 20-81-330.D.3. and D.5.]

2. *Safety*

Discuss the use of truck wheel curbs and other safety features to prevent backing or falling into a pit, if applicable. [9 VAC 20-81-330.D.4.]

3. *Utilities*

Discuss the public or private utilities that will serve the site as indicated on the Utility Plan provided with the Design Plans and discuss the water supply available for unloading, receiving, tipping, and storage area cleaning. [9 VAC 20-81-330.D.3 and 480.A.4.(3)]

4. *Design Features*

Describe how the facility design will prevent the migration of vectors, odors, dust, wash water and litter off site. The facility shall meet all applicable Air Pollution Control Board regulations concerning odor and dust migration. Describe the fire alarm and protections systems in place to detect, control, and extinguish fires. [9 VAC 20-81-330.D.1., D.7., and D.9.]

5. *Bioremediation Facilities*

Facilities conducting bioremediation shall describe how the system has been designed:

- To be chemically resistant to waste or leachate;
- With sufficient strength and thickness to prevent collapse under the pressures exerted by overlying waste, waste cover materials, and equipment used in the area; and
- To provide operational temperatures that are favorable to the bioremediation process.

[9 VAC 20-81-330.D.11.]

D. Design Description Manual

1. *Process Capacity*

Provide the following information, referencing the Design Plans as applicable. [9 VAC 20-81-330.D. 6. and D.12.a through f., 480.B.1.b. and 480.B.1.c.(1)]

- The process rate of the facility, in both tons per day and tons per hour;
- The location and the capacity of normal loading, unloading and storage areas¹, in

¹ Storage areas should address areas for storage of unprocessed incoming solid waste, process waste residues and effluents, and recovered materials, as applicable.

cubic yards and tons;

- The location and the capacity of emergency loading, unloading, storage areas and other disposal capabilities to be used when the facility system down-time exceeds 24 hours;
- The designation of alternate management facilities or discussion of plans for transfer of stored waste in the event facility down-time exceeds 72 hours; and
- The expected daily quantity of waste residue generation.

2. *Use, Reuse, and Reclamation*

Describe any materials use, reuse, or reclamation activities, either on incoming solid waste or outgoing residue, to be operated in conjunction with the proposed facility. [9 VAC 20-81-330.D.12.g.]

3. *Disposal of Residues*

Describe the proposed ultimate disposal location(s) for all facility generated waste residues (including, but not limited to, residues and bypass materials, byproducts resulting from air pollution control devices, and unauthorized wastes). Schedules for disposal of these materials at their designated locations shall be provided. [9 VAC 20-81-330.D.12.f.]

4. *Plan Views*

Reference the appropriate Design Plans provided that show the building dimensions, building setbacks, side and rear distances between the proposed structure and other existing or proposed structures, roadways, parking areas, and site boundaries. [9 VAC 20-81-330.D.12.h.]

5. *Interior Floor Plans*

Reference the appropriate Design Plans provided that show the layout, profile view, and dimensions of the processing lines, interior unloading, sorting, storage, and loading areas as well as other functional areas. [9 VAC 20-81-330.D.12.i.]

E. **Liquids Management**

1. *Stormwater*

Provide a description of all drainage patterns and surface drainage control structures within the unloading, receiving, tipping, and storage areas and at the site perimeter to include berms, ditches, sedimentation basins, pumps, sumps, culverts, pipes, inlets, velocity breaks, sodding, erosion matting, or other methods of erosion control. Reference the Design Plans as appropriate. If applicable, discuss the permits issued for stormwater management and discharge. [9 VAC 20-81-480.A.5.c.]

2. *Wastewater Collection and Disposal*

Discuss the wastewater collection, control and treatment (if applicable) systems to include pipes, manholes, trenches, berms, collection sumps or basins, pumps, and

risers. Reference the Design Plans as appropriate. Indicate the final disposal location of all wastewaters. [9 VAC 20-80-330.D.3. and 480.A.5.g.]

F. Appendices

Provide the following appendices, if applicable. [9 VAC 20-81-480.B.1.e.]

1. *Calculations*
Provide Calculations substantiating the proposed process rate and storage capacity provided on DEQ Form PTB and discussed in this Design Report.
 - a. Process Rate
 - b. Storage Capacity
 - c. Table relating process rate to equipment and personnel needs
2. *Material Specifications*
3. *Operating Agreements*
4. *Leachate Treatment Agreement(s)*
5. *Documentation of Long-Term Funding*
6. *Copies of DEQ issued Permits (Air, VPDES, etc.)*

VI. DESIGN REPORT FOR WASTE PILES

The Design Report should include supplemental discussions and design calculations to facilitate department review of the proposed facility design. The Design Report should be submitted with the Part B Application or Part B Modification Application as Attachment VI to DEQ Form SW PTB. The Design Report should address the information provided below, which applies to applicants proposing to construct and operate one or more waste piles. [9 VAC 20-81-330.F. and 480.B.2.]

Format The Design Report should start with a title page and table of contents followed by each of the following sections, providing the information requested. The title page should identify the facility name and permit number, the permit applicant, document date, and document preparer information. In addition, the header or footer of each page should include the facility name, permit number, document title, revision date, and page number.

A. Introduction

Provide an introduction that identifies the project title; engineering consultants; site owner, licensee, and operator; facility type and expected site life. Identify any exemptions or variances desired by the applicant.

Specify the quantities and wastes to be accepted, as indicated on DEQ Form PTB, and reference any information provided in PTB Attachment VIII on special waste acceptance and handling procedures. Identify the municipalities, industries, and collection and transportation agencies served. [9 VAC 20-81-480.B.1.a.]

B. Site Access

1. Security

Provide a discussion on the perimeter fencing types and gate controls to be employed to prevent unauthorized access. [9 VAC 20-81-480.A.5.e. and A.6.]

2. Roads

Indicate access roads to the gate and from the gate to the management areas. Show traffic flow patterns to and within the storage, transfer, and treatment areas. [9 VAC 20-81-480.A.5.d.]

3. Aesthetics

Discuss the natural or artificial screening of the operation areas. Ensure the buffer area required under 9 VAC 20-81-320.F.1. is clearly shown on the Design Plans. [9 VAC 20-81-480.A.5.f.]

C. Facility Design

Provide information on the following topics, referencing the Design Plans as appropriate.

1. *Location of Waste Piles*

Indicate whether waste piles will be located within or under a structure or exposed to the elements. Depending on the waste pile location, provide the following additional information, as applicable. [9 VAC 20-81-330.F.1 and F.2.]

{For Covered Waste Piles}

a. Surface of Structures, Buildings and Ramps

For waste piles located inside or under a structure, provide a description of the structure, building, and ramp surfaces, demonstrating that they can be easily cleaned. [9 VAC 20-81-330.F.1.e.]

b. Waste Pile Management

Provide a description of the materials to be managed in piles, indicating the pile will not generate leachate through decomposition or reactions. Liquids or materials containing free liquids shall not be managed. Describe the methods to be employed to control dispersal of the wastes by the wind (other than wetting) and to prevent surface water run-on. [9 VAC 20-81-330.F.1.]

{For Exposed Waste Piles}

a. Liner System

Provide a description of the liner system to be installed to prevent the migration of wastes out of the pile into the adjacent groundwater or surface water. The liner description shall indicate the materials of construction, ensuring the necessary chemical properties and sufficient strength and thickness are provided to prevent failure due to pressure gradients, physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation.

Proposals for alternate liner systems must be accompanied by a demonstration that the alternate liner design and operating practices, together with the location characteristics, will prevent the migration of waste constituents into the groundwater or surface water. The demonstration should discuss the nature and quantity of wastes; the alternate design and operation; the hydrogeologic setting of the facility; and other factors that would influence the quality and mobility of leachate produced. [9 VAC 20-81-330.F.2.a.(1)(a), 2.a.(1)(c), and 2.b.]

b. Liner Foundation

Discuss the liner foundation or base, indicating it will be capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift. [9 VAC 20-81-330.F.2.a.(1)(b)]

2. *Surface of Storage and Treatment Units*

Provide a description of the surfaces of storage and treatment units, demonstrating that they will withstand the physical, chemical, and biological characteristics of the wastes managed. [9 VAC 20-81-330.F.4.]

3. *Areas for Segregated Wastes*

Describe the areas, facilities, and equipment available for segregating undesirable components from the incoming solid waste. [9 VAC 20-81-330.F.3.]

4. *Design Features*

Describe how the design of storage and treatment units will prevent the migration of vectors, odors, dust, wash water, waste materials, and litter off site. Describe the fire alarm and protections systems in place to detect, control, and extinguish fires. [9 VAC 20-81-330.F.4.]

D. *Liquids Management*

{Applicable only to exposed waste piles}

1. *Run-on Control System*

Provide a description of the design and operation of the run-on control system to be installed. The system shall be capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm. Reference the Design Plans as appropriate. [9 VAC 20-81-330.F.2.e. and 480.A.5.c.]

2. *Run-off Management System*

Provide a description of the design and operation of the run-off management system to be installed. The system shall be designed to collect and control at least the water volume resulting from a 24-hour, 25-year storm. If applicable, discuss the permits issued for stormwater management and discharge. [9 VAC 20-81-330.F.2.f.]

3. *Leachate Collection and Disposal*

Discuss the design of the leachate collection and removal system. The system shall be designed to ensure the leachate depth of the liner does not exceed 1 foot at its lowest point. In addition, discuss the materials used to construct the leachate collection and removal system ensuring the materials are chemically resistant to the waste managed and expected leachate generated; of sufficient strength and thickness to prevent collapse due to pressures exerted by overlaying wastes, waste cover materials, and any equipment used at the pile; and that the system is capable of operating without clogging. Reference the Design Plans as appropriate. Indicate the final disposal location of all wastewaters. [9 VAC 20-80-330.F.2.a.(2)]

E. Appendices

Provide the following appendices, if applicable. [9 VAC 20-81-480.B.2.b.]

1. *Calculations*

Provide Calculations substantiating the proposed process rate and storage capacity provided on DEQ Form PTB and discussed in this Design Report.

- a. Process Rate
- b. Storage Capacity
- c. Table relating process rate to equipment and personnel needs
- d. Sizing of Surface Water Control Features

2. *Material Specifications*

3. *Operating Agreements*

4. *Leachate Treatment Agreement(s)*

5. *Documentation of Long-Term Funding*

6. *Copies of DEQ issued Permits (Air, VPDES, etc.)*

VII. CONSTRUCTION QUALITY ASSURANCE & TECHNICAL SPECIFICATIONS

This section discusses the Construction Quality Assurance Plan and Technical Specifications to be submitted with the Part B Application or Part B Modification Application as Attachment VII to DEQ Form SW PTB. This section applies to applicants proposing to construct and operate any of the solid waste management facilities discussed above. [9 VAC 20-81-480.B.2.a.(1) and (2)]

A. Construction Quality Assurance Plan

The Construction Quality Assurance (CQA) Plan is designed to ascertain that the constructed facility meets the requirements described in the plans and specifications. Provide specific instructions regarding all aspects of site construction for the type of solid waste management facility proposed. Provide references as appropriate to the Design Plans and Technical Specifications. [9 VAC 20-81-480.B.2.a.(1)]

{Waste Pile Liners} The CQA Plan for facilities operating one or more waste piles shall include procedures for inspecting the liner during construction and installation for uniformity, damage, and imperfections. Synthetic liners shall be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters. Soil liners shall be inspected for imperfections such as lenses, cracks, channels, root holes, or other structural nonuniformities. Procedures for correcting imperfections in the liner design shall be repaired. [9 VAC 20-81-330.F.2.c. and 2.d.]

B. Technical Specifications

Provide technical specifications for the following site features:

- Access Roads and Entrance
- Screening
- Fencing; and
- Other Special Design Features. Examples include utilities for stormwater and wastewater conveyance and treatment, and surfaces for unloading, receiving, treatment, and storage areas.

[9 VAC 20-81-480.B.2.a.(2)]